What we claim is:

1.   A LAN switching method comprising:

a first step of establishing a plurality of VLAN's different from each other for a single group composed of a plurality of members, and

5   a second step of mapping frames from the members to a predetermined VLAN selected from among the VLAN's.

2.   The LAN switching method as claimed in claim 1, further comprising, between the first and the second steps, a third step of mapping a received frame to the group to which a source member of

10   the frame belongs, based on information of the frame received,

the second step mapping the frame to a predetermined VLAN selected from among a plurality of VLAN's of the group to which the frame has been mapped.

3.   The LAN switching method as claimed in claim 1 wherein each

15   path of the VLAN's comprises a physical or a logical loopless path.

4.   A LAN switching method comprising:

a first step of associating a plurality of paths with a VLAN having a plurality of members as components, and

a second step of mapping frames from the members to a

20   predetermined path selected from among the paths.

5.   The LAN switching method as claimed in claim 4 wherein each path comprises a physical or a logical loopless path.

6.   A LAN switch comprising:

a VLAN table for associating a plurality of different VLAN's with

25   a single group composed of a plurality of members, and

a VLAN mapping portion for mapping frames from the members to a predetermined VLAN selected from the VLAN table.

7.   A LAN switch comprising:

a VLAN table for associating a plurality of paths with a single

30   VLAN having same members as components, and

a VLAN mapping portion for mapping frames from the members

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to a predetermined path selected from among the paths.

8. The LAN switch as claimed in claim 6 wherein each path of the VLAN's comprises a physical or a logical path.

9. The LAN switch as claimed in claim 7 wherein each path comprises a physical or a logical path.

10. The LAN switch as claimed in claim 8 or 9 wherein the path is loopless.

11. The LAN switch as claimed in claim 10 wherein the path is selected by a spanning tree protocol.

12. The LAN switch as claimed in claim 6, further comprising a VLAN group table for associating information of a frame with the group to which a source member of the frame belongs, and a VLAN group mapping portion for mapping a received frame to an associated group based on information of the frame by looking up the VLAN group table,

the VLAN mapping portion mapping the frame to a predetermined VLAN of the group selected from the VLAN table.

13. The LAN switch as claimed in claim 6, further comprising a line fault detector for detecting a line fault on each VLAN,

the VLAN mapping portion mapping the frame to a predetermined VLAN based on fault information from the line fault detector.

14. The LAN switch as claimed in claim 6 wherein the VLAN mapping portion sequentially maps the frame to each VLAN per frame.

15. The LAN switch as claimed in claim 6 wherein the VLAN mapping portion maps the frame to a VLAN different from a VLAN to which a frame has been mapped by a VLAN mapping portion of another LAN switch.

16. The LAN switch as claimed in claim 6, further comprising a frame classifier for classifying received frames to a plurality of classes,

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the VLAN mapping portion mapping the frames to VLAN's associated with the classes.

17. The LAN switch as claimed in claim 6, further comprising a path monitor for monitoring a response on each VLAN,

the VLAN mapping portion mapping a frame, when the path monitor detects a VLAN having a lowered response, having been mapped to the VLAN to another VLAN.

18. The LAN switch as claimed in claim 6, further comprising a path selector for transmitting, when a frame having an IP packet capsuled is received, a ping frame to a member having a destination IP address of the IP packet, and for selecting an optimum VLAN, based on a response time of the transmission, from among a plurality of VLAN's associated with the concerned frame,

the VLAN mapping portion mapping the frame having the IP packet capsuled for the IP address to the optimum VLAN.

19. The LAN switch as claimed in claim 6, further comprising a pause frame storage for monitoring a number of pause frames received on each VLAN, and for notifying the VLAN mapping portion of a VLAN in which the number of pause frames within a predetermined time exceeds a specified value,

the VLAN mapping portion mapping a frame having been mapped to the VLAN to another VLAN.

20. The LAN switch as claimed in claim 6, further comprising an error frame storage for storing a number of frames including errors within a predetermined time on each VLAN, and for determining whether or not the number has reached a predetermined specified value,

the VLAN mapping portion mapping, based on the determination result, a frame having been mapped to the VLAN having reached the specified value to another VLAN.

21. The LAN switch as claimed in claim 13, further comprising an

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alarm processor for broadcasting an alarm transferring frame notifying a VLAN on which a fault has occurred through a designated VLAN, based on an alarm distribution request from the line fault detector,

5   the line fault detector providing the alarm processor with an alarm distribution request requesting to transmit the alarm transferring frame through a VLAN on which a fault has occurred when a line fault on the VLAN has been detected, and providing the alarm processor with an alarm distribution request requesting to 10   transmit the alarm transferring frame through VLAN's except the VLAN on which a fault has occurred when an alarm transferring frame has been received from another LAN switch.